

Enzyme	No. Cuts	1	620	1239	1859	2479	3098	3718
AccI	2.			1				
AflIII	3.		1				1	1
AluI	10.		1	1	2	1	2	11
Asp718	1.					1		
AsuII	1.		1					
AvaI	1.				1			
AvrII	2.			1		1		
BanI	1.					1		
BanII	1.			1				
BbvI has no cut site								
BclI	2.				1		1	
BglI	1.			1				
BinI has no cut site								
BsmI	5.2				1		1 1	
BspMI has no cut site								
BspMII	1.						1	
BssHII	1.					1		
CfrI has no cut site								
CfrIOI has no cut site								
ClaI	4. 1		1	1		1 1		
DdeI	8.		1		1	1 1 1	1	
DpnI	6.		1		1	1	1	1
DraI	3.					1		1
DraII	1.							
ECORI	2.		1			1		
ECORI'	32.	12121 11 1 2	1	211111	3 12 1 1	1 1		1 1
ECORI*	45.	12131111 223 1 2 2 112	1 2	2 122 121	1 11	1 11		1 11
ECORV	3.	2		1				
Fnu4HI	6.	11		1		1	11	
FnuDI	2.		1	1		1		

FIG. 1A

Enzyme	No. Cuts	620	1239	1859	2479	3098	3718
FnuDII	2.	1			1		
FokI has no cut site							
GdiII	1.				1		
GsuI has no cut site							
HaeII	1.				1		
HaeIII	2.		1		1		
HgaI	2.				1		
HgiEII has no cut site							
HhaI	5.			2	2	1	
HindDIII	1.					1	
HinFI	16.	1	1	1	2	1	1
HinPI	5.			2	2	1	
HpaII	5.	1	1		2	1	
HphI	4.			1	1	1	
KpnI	1.					1	
MaeI	12.	11	1	1	1	13	
MaeII	15.	1	1	1	1	1	1
MaeIII	12.11			1	1	1	1
MboI	6.	1		1	1	1	1
MboII	15.	1	1	1	1	1	1
MnlI has no cut site							
NheI	1.				1		
NlaIII	8.		1		1	2	1
NlaIV	8.	1	1		1	1	1
NsiI	2.1	1	1		1		1
NspBII	3.		1				1
NspCI	2.				1	1	
PstI	2.			1			
PvuII	2.						1
RsaI	14.	1	2	11	11	1	21

FIG. 1B

Enzyme	No. Cuts	1	620	1239	1859	2479	3098	3718
SacI	1.	1						
Sau3AI	6.		1		1	1	1	1
Sau96I	6.	1		1		1	1	
SciNI	5.				2	2		
ScrFI	5.	1		1		1	1	
SfaNI has no cut site								
SnaI has no cut site								
SnaBI	3.				1	1		
SpeI	1.	1						
SspI	1.							
StyI	3.			1		1	1	
TaqI	14.	1	1	1	1	1	1	1
Tth111II	3.		1		1	1	1	1
XbaI	3.		1					
XhoI	1.				1			
XhoII	1.		1					
XmnI	5.11				1			1

FIG. 1C

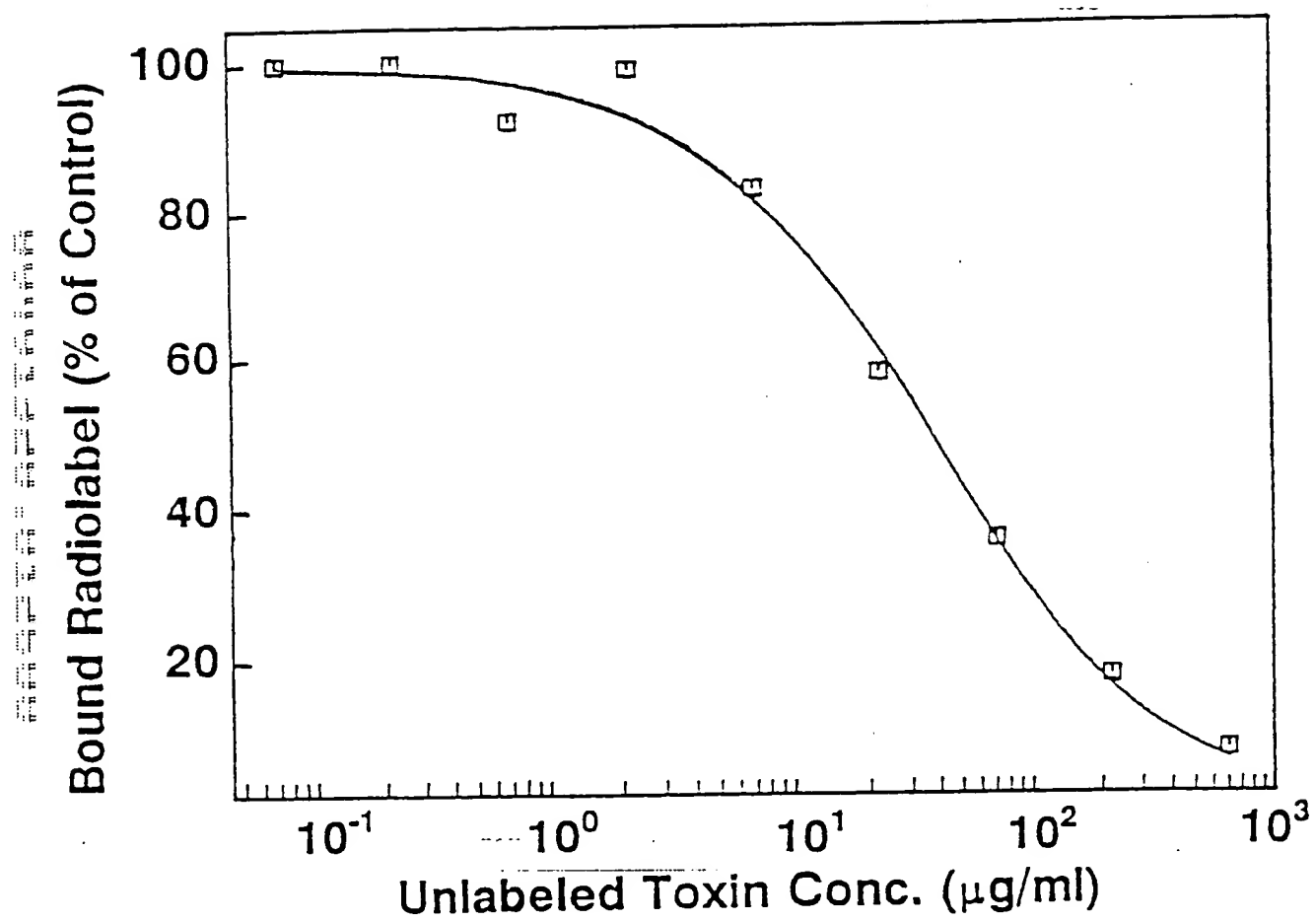


FIG. 2

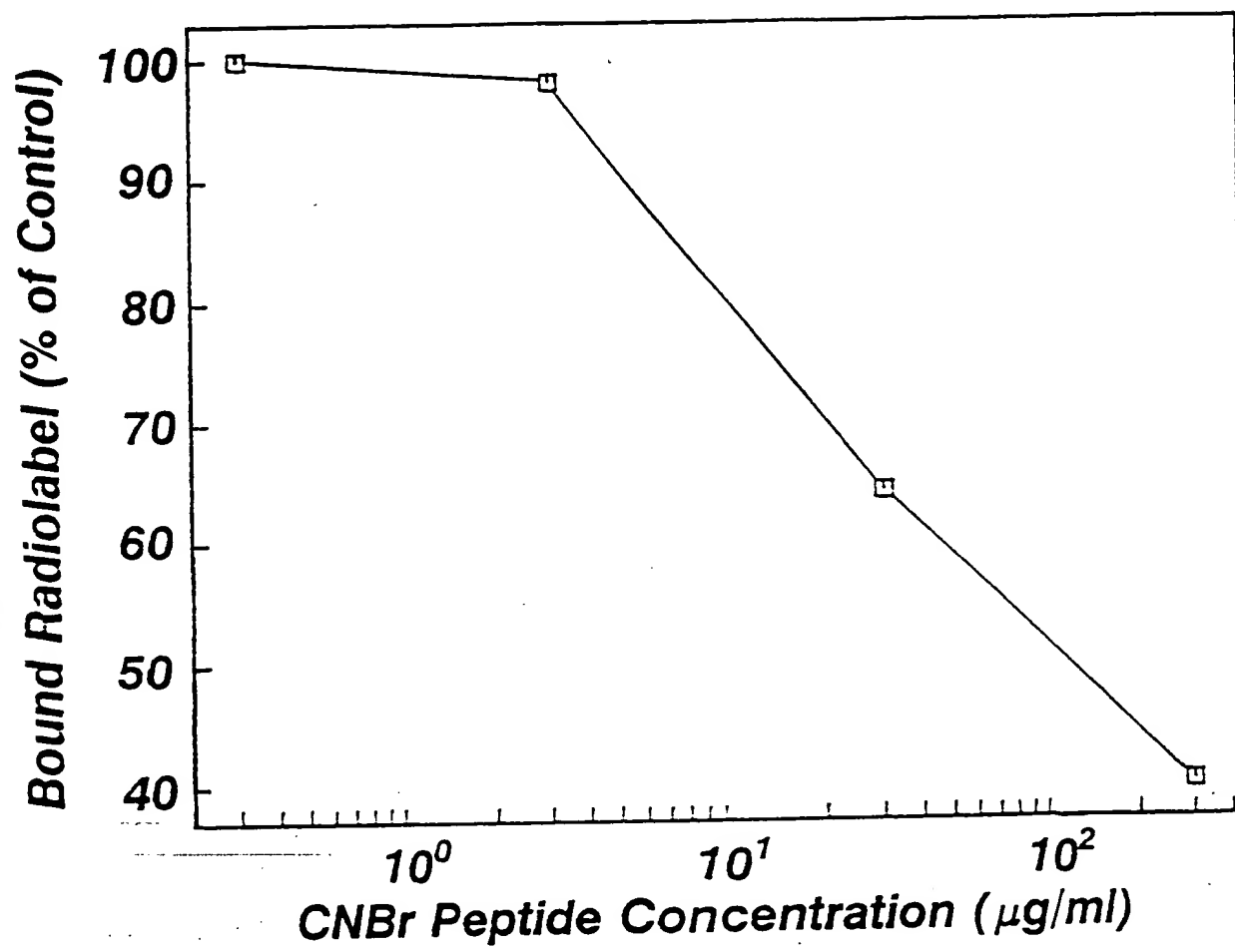


FIG. 3

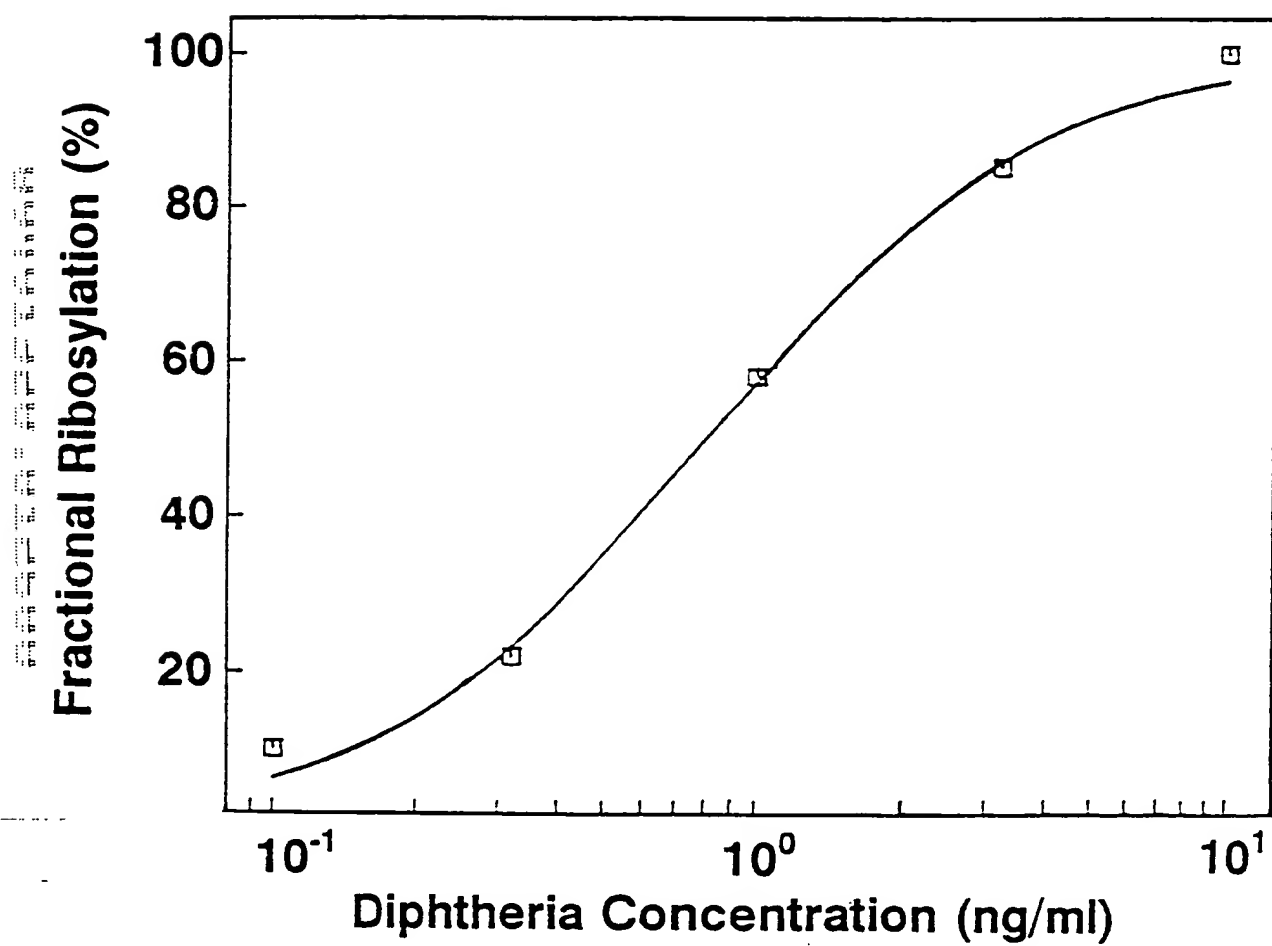


FIG. 4

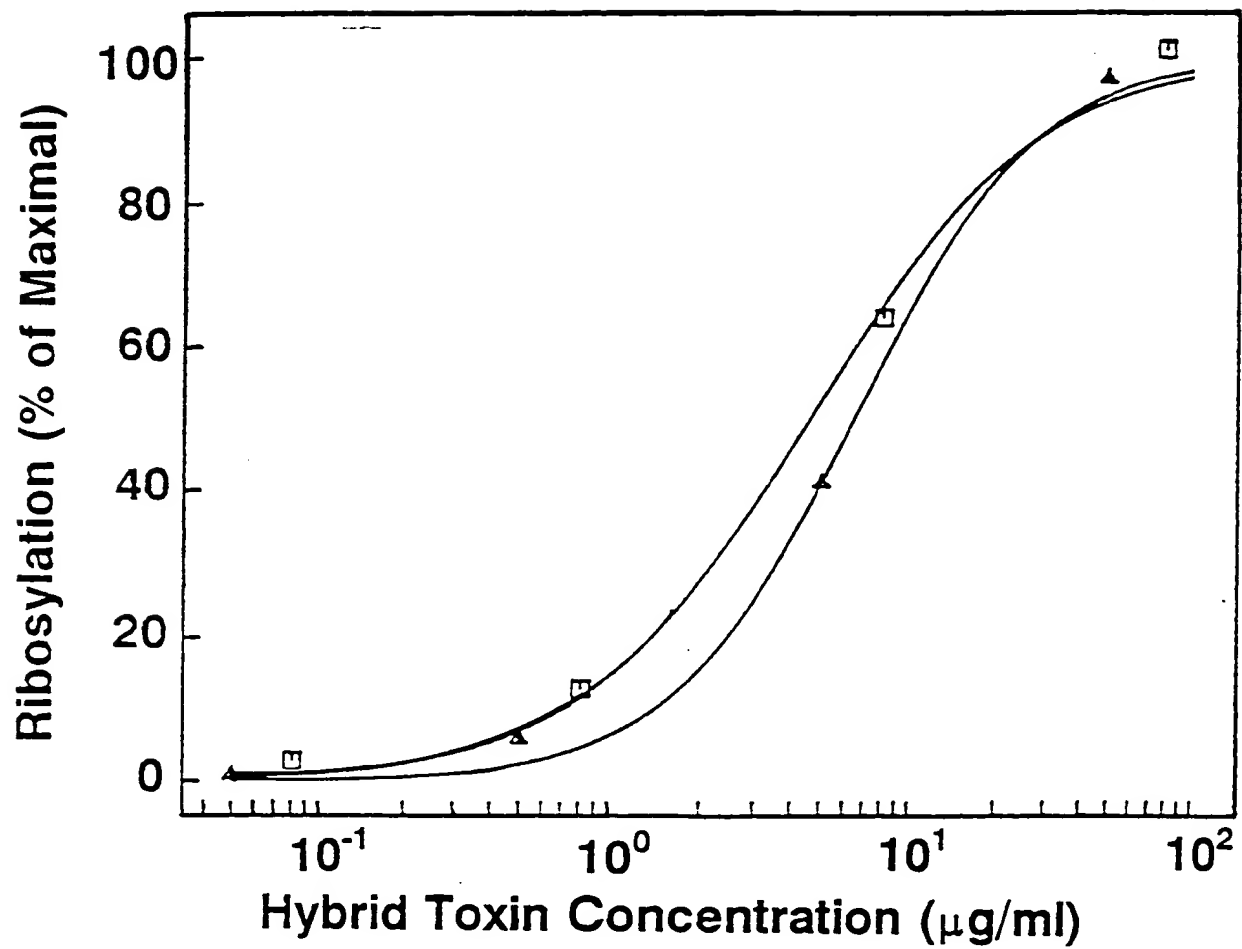


FIG. 5

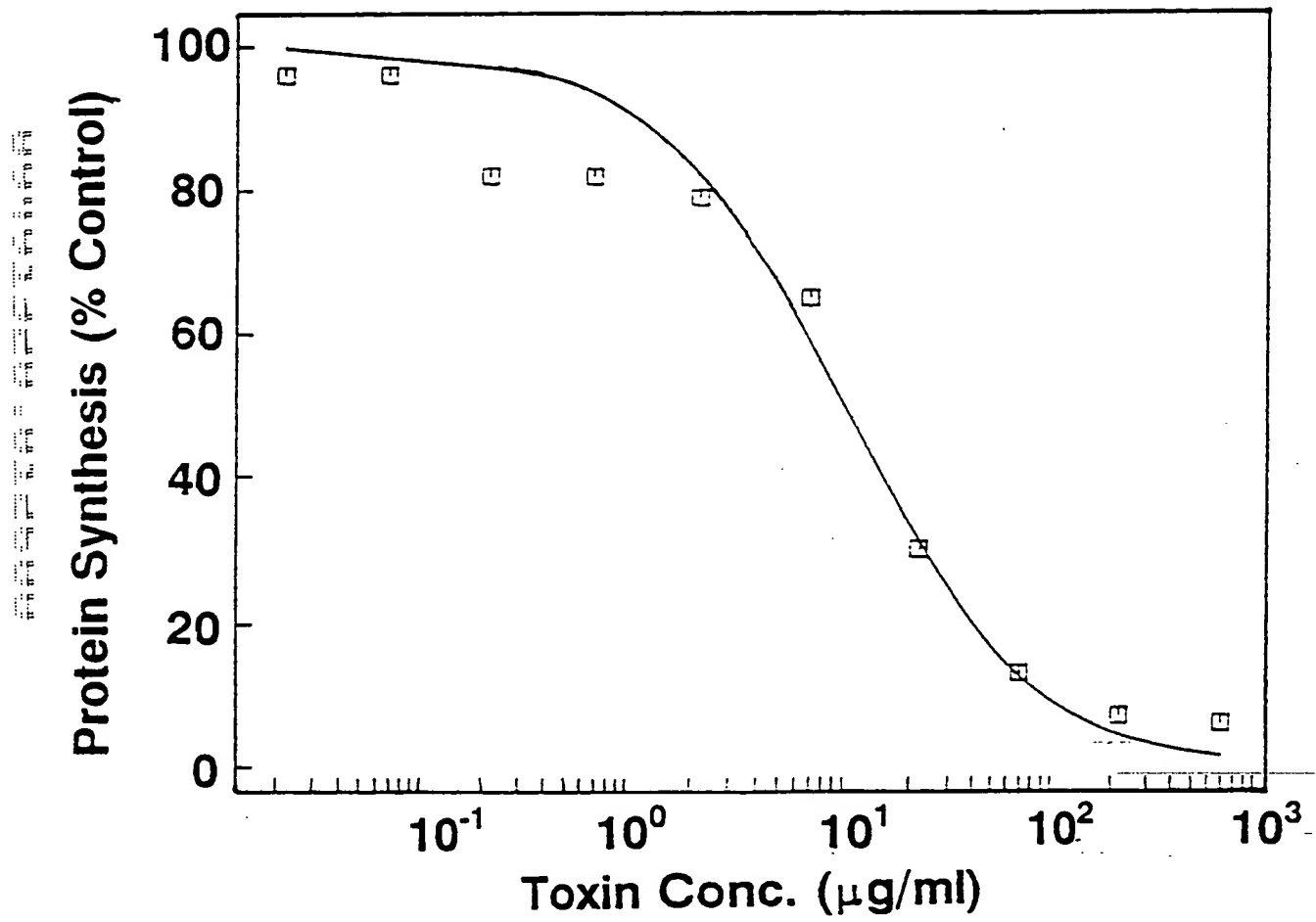


FIG. 6

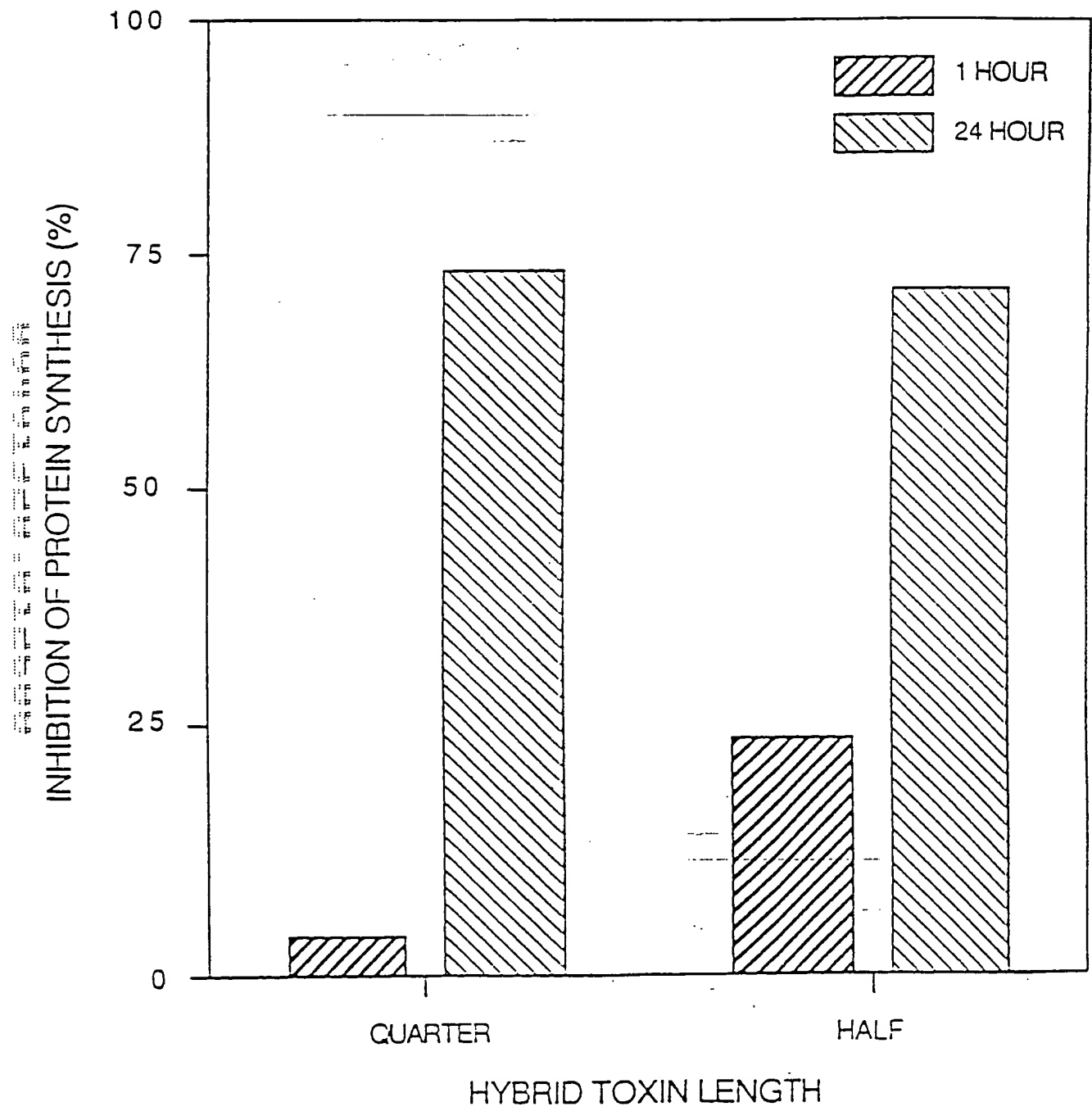


FIG. 7

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10 20 30 40 50 60 70 80
GTGAGCAGAAAAGCTGTTTGCCTCAATCTTAATAGGGGCGCTACTGGGGATAGGGGCCCCACCTTCAGCCCATGCAGGCGC

90 100 110 120 130 140 150 160
TGATGATGTTGTTGATTCTTCTAAATCTTTTGTGATGGAAAACCTTTCTTCGTACCACGGGACTAAACCTGGTTATGTAG

170 180 190 200 210 220 230 240
ATTCCATTCAAAAAGGTATACAAAAGCCAAAATCTGCTACACAAGGAAATTATGACGATGATTGGAAAGGGTTTTATAGT

250 260 270 280 290 300 310 320
ACCGACAATAAATACGACGCTGCGGGATACTCTGTAGATAATGAAAACCCGCTCTCTGGAAAAGCTGGAGGCGTGGTGAA

330 340 350 360 370 380 390 400
AGTGACGATATCCAGGACTGACGAAGGTTCTCGCACTAAAAGTGGATAATGCCGAACTATTAAGAAAGAGTTAGGTTTAA

410 420 430 440 450 460 470 480
GTCTCACTGAACCGTTGATGGAGCAAGTCGGAACGGAAGAGTTTATCAAAAAGGTTCCGGTGATGGTGCTTCGCGTGTAGTG

490 500 510 520 530 540 550 560
CTCAGCCCTTCCCTTCGCTGAGGGGAGTTCTAGCGTTGAATATATTAATAACTGGGAACAGGCGAAAGCGTTAAGCGTAGA

570 580 590 600 610 620 630 640
ACTTGAGATTAATTTTGAACCCGTTGGAAAACGTGGCCAAAGATGCGATGTATGAGTATATGGCTCAAGCCTGTGCAGGAA

650 660 670 680 690 700 710 720
ATCGTGTGAGGCGATCAGTAGGTAGCTCATTGTCATGCATAAAATCTTGATTGGGATGTCATAAGGGATAAACTAAGACA

730 740 750 760 770 780 790 800
AAGATAGAGTCTTTGAAAGAGCATGGCCCTATCAAAAATATAAATGAGCGAAAGTCCCAATAAAACAGTATCTGAGGAAAA

810 820 830 840 850 860 870 880
AGCTAAACAATACCTAGAAGAATTTTCATCAAACGGCATTAGAGCATCCTGAATTGTCAGAACTTAAACCGTTACTGGGA

890 900 910 920 930 940 950 960
CCAATCCTGTATTGCTGGGGCTAACTATGCGGGCGTGGGCAGTAAACGTTGCGCAAGTTATCGATAGCGAAACAGCTGAT

970 980 990 1000 1010 1020 1030 1040
AATTTGGAAAAGACAAGTCTGCTCTTTTCGATACTTCCTGGTATCGGTAGCGTAATGGGCATTGCAGACGGTGCCGTTCA

1050 1060 1070 1080 1090 1100 1110 1120
CCACAATACAGAAGAGATAGTGGCACAATCAATAGCTTTATCGTCTTTAATGGTTGCTCAAAGCTATTCCATTGGTAGGAG

1130 1140 1150 1160 1170 1180 1190 1200
AGCTAGTTGATATTGGTTTCGCTGCATATAATTTTGTAGAGAGTATTATCAATTTATTTCAAGTAGTTCATAATTCGTAT

FIG. 8A

11/15

1530 1540 1550 1560 1570 1580 1590 1600
TGTGCATGCTAACCTGTTTCGAACAGTTTCCCAATTAACAAGAGAAATTTATACAAACCCAGTATTAGAAAATTTTGATG
1610 1620 1630 1640 1650 1660 1670 1680
GTAGTTTTTCGAGGCTCGGCTCAGGGCATAGAAAGAAGTATTAGGAGTCCACATTTGATGGATATACTTAACAGTATAACC
1690 1700 1710 1720 1730 1740 1750 1760
ATCTATACGGATGCTCATAGGGGTTATTATTATTGGTCAGGGCATCAAATAATGGCTTCTCCTGTAGGGTTTTTCGGGGCC
1770 1780 1790 1800 1810 1820 1830 1840
AGAATTCACCTTTTCCGCTATATGCAACTATGGGAAATGCAGCTCCACAACAACGTATTGTTGCTCAACTAGGTCAGGGCG
1850 1860 1870 1880 1890 1900 1910 1920
TGTATAGAACATTATCGTCCACTTTATATAGAAGACCTTTTAATATAGGGATAAATAATCAACAACCTATCTGTTCTTGAC
1930 1940 1950 1960 1970 1980 1990 2000
GGGACAGAATTTGCTTATGGAACCTCCTCAAATTTGCCATCCGCTGTATACAGAAAAGCGGAACGGTAGATTTCGCTGGA
2010 2020 2030 2040 2050 2060 2070 2080
TGAAATACCGCCACAGAATAACAACGTGCCACCTAGGCAAGGATTTAGTCATCGATTAAGCCATGTTTCAATGTTTCGTT
2090 2100 2110 2120 2130 2140 2150 2160
CAGGCTTTAGTAATAGTAGTGTAAAGTATAATAAGAGCTCCTATGTTCTCTTGGATACATCGTAGTGCTGAATTTAATAAT
2170 2180 2190 2200 2210 2220 2230 2240
ATAATTCGATCGGATAGTATTACTCAAATCCCTGCAGTGAAGGGAAACTTTCTTTTAAATGTTTCTGTAATTTTCAGGACC
2250 2260 2270 2280 2290 2300 2310 2320
AGGATTTTACTGGTGGGGACTTAGTTAGATTAAATAGTAGTCGAAATAACATTCAGAATAGAGGGTATATTGAAGTTCCAA
2330 2340 2350 2360 2370 2380 2390 2400
TTCACCTCCCATCGACATCTACCAGATATCGAGTTCGTGTACGGTATGCTTCTGTAACCCCGATTACCTCAACGTTAAT
2410 2420 2430 2440 2450 2460 2470 2480
TGGGGTAATTCATCCATTTTTTCCAATACAGTACCAGCTACAGCTACGTCAATTAGATAATCTACAATCAAGTGATTTTGG
2490 2500 2510 2520 2530 2540 2550 2560
TTATTTTGAAGTCGCAATGCTTTTACATCTTCATTAGGTAATATAGTAGGTGTTAGAAATTTTAGTGGGACTGCAGGAG
2570 2580 2590 2600 2610 2620
TGATAATAGACAGATTTGAATTTATTCCAGTTACTGCAACACTCGAGTAGTAGGTCGACAGCTT
1210 1220 1230 1240 1250 1260 1270 1280
AATCGTCCCGCGTATTCTCCGGGGCATAAAACGCAACCATTTCTTCATGACGGGTATGCTGTCAGTTGGAACACTGTTGA
1290 1300 1310 1320 1330 1340 1350 1360
AGATTCGATAATCCGAACCTGTTTTCAAGGGGAGAGTGGGCACGACATAAAAATTACTGCTGAAAATACCCCGCTTCCAA
1370 1380 1390 1400 1410 1420 1430 1440
TCGCGGGTGTCTACTACCGACTATTCTTGAAAGCTGGACGTTAATAAGTCCAAGACTCATATTTCCGTAAATGGTCCG
1450 1460 1470 1480 1490 1500 1510 1520
AAAATAAGGATGCGTTGCAGAGCTATAGACGGTGATGTAACTTTTTGTGCGCCCTAAATCTCCTGTTTATGTTGCTAATGG

FIG. 8B

12/15

10 20 30 40 50 60 70 80
GTGAGCAGAAAAGTGTTCGCTCAATCTTAATAGGGGCGCTACTGGGGATAGGGGCCCCACCTTCAGCCCATGCAGGCGC

90 100 110 120 130 140 150 160
TGATGATGTTGTTGATTCTTCTAAATCTTTTGTGATGGAAAACCTTTCTTCGTACCACGGGACTAAACCTGGTTATGTAG

170 180 190 200 210 220 230 240
ATTCCATTCAAAAAGGTATACAAAAGCCAAAATCTGGTACACAAGGAAATTATGACGATGATTGGAAAGGGTTTTATAGT

250 260 270 280 290 300 310 320
ACCGACAATAAATACGACGCTGCGGGATACTCTGTAGATAATGAAAACCCGCTCTCTGGAAAAGCTGGAGGCGTGGTGAA

330 340 350 360 370 380 390 400
AGTGACGTATCCAGGACTGACGAAGGTTCTCGCACTAAAAGTGGATAATGCCGAAACTATTAAGAAAGAGTTAGGTTTAA

410 420 430 440 450 460 470 480
GTCTCACTGAACCGTTGATGGAGCAAGTCGGAACGGAAGAGTTTATCAAAAAGGTTCCGGTGATGGTGCTTCGCGTGTAGTG

490 500 510 520 530 540 550 560
CTCAGCCTTCCCTTCGCTGAGGGGAGTTCTAGCGTTGAATATATTAATAACTGGGAACAGGCGAAAGCGTTAAGCGTAGA

570 580 590 600 610 620 630 640
ACTTGAGATTAATTTTGAAAACCGTGGAAAACGTGGCCAAGATGCGATGTATGAGTATATGGCTCAGCCCTGTGCAGGAA

650 660 670 680 690 700 710 720
ATCGTGTTCAGGCGATCAGTAGGTAGCTCATTGTGCATGCATAAATCTTGATTGGGATGTCATAAGGGATAAACTAAGACA

730 740 750 760 770 780 790 800
AAGATAGAGTCTTTGAAAGAGCATGGCCCTATCAAAAATAAAATGAGCGAAAGTCCCAATAAAACAGTATCTGAGGAAAA

810 820 830 840 850 860 870 880
AGCTAAACAATACCTAGAAGAATTTCTCAACGGCATTAGAGCATCCTGAATTGTCAGAAGCTTAAAACCGTTACTGGGA

890 900 910 920 930 940 950 960
CCAATCCTGTATTTCGCTGGGGCTAACTATGCGGCGTGGGCAGTAAACGTTGCGCAAGTTATCGATAGCGAAACAGCTGAT

970 980 990 1000 1010 1020 1030 1040
AATTTGGAAAAGACAAGTGTCTCTTTTCGATACTTCCTGGTATCGGTAGCGTAATGGGCATTGCAGACGGTGCCGTTCA

1050 1060 1070 1080 1090 1100 1110 1120
CCACAATACAGAAGAGATAGTGGCACAATCAATAGCTTTATCGTCTTTAATGGTTGCTCAAGCTATTCCATTGGTAGGAG

1130 1140 1150 1160 1170 1180 1190 1200
AGCTAGTTGATATTGGTTTCGCTGCATATAATTTTGTAGAGAGTATTATCAATTTATTTCAGTAGTTTCATAATTCGTAT

FIG. 9A

1210 1220 1230 1240 1250 1260 1270 1280
 AATCGTCCCGCGTATTCTCCGGGGCATAAAACGCAACCATTTCTTCATGACGGGTATGCTGTCAGTTGGAACACTGTTGA
 1290 1300 1310 1320 1330 1340 1350 1360
 AGATTCGATAATCCGAACTGGTTTTCAAGGGGAGAGTGGGCACGACATAAAAATTACTGCTGAAAATACCCCGCTTCCAA
 1370 1380 1390 1400 1410 1420 1430 1440
 TCGCGGGTGTCTACTACCGACTATTCCTGGAAAGCTGGACGTTAATAAGTCCAAGACTCATATTTCCGTAAATGGTCCG
 1450 1460 1470 1480 1490 1500 1510 1520
 AAAATAAGGATGCGTTGCAGAGCTATAGACGGTGATGTAACTTTTTGTGCGCCCTAAATCTCCTGTTTATGTTGGTAATGG
 1530 1540 1550 1560 1570 1580 1590 1600
 TGTGCGATGCAGGTGCAGCTCCTATGTTCTCTTGGATACATCGTAGTGCTGAATTTAATAATATAATTGCATCGGATAGTA
 1610 1620 1630 1640 1650 1660 1670 1680
 TTAATCAAATCCCTGCAGTGAAGGGAACTTTCTTTTTTAATGGTTCTGTAAATTCAGGACCAGGATTTACTGGTGGGGAC
 1690 1700 1710 1720 1730 1740 1750 1760
 TTAGTTAGATTAAATAGTAGTCGAAATAACATTCAGAATAGAGGGTATATTGAAGTTCCAATTCACCTCCCATCGACATC
 1770 1780 1790 1800 1810 1820 1830 1840
 TACCAGATATCGAGTTCGTGTACGGTATGCTTCTGTAAACCCCGATTACACCTCAACGTTAATTGGGGTAATTCATCCATTT
 1850 1860 1870 1880 1890 1900 1910 1920
 TTTCCGATACAGTACCAGCTACAGCTACGTCATTAGATAATCTACAATCAAGTGATTTTGTTATTTTGAAAGTCGCAAT
 1930 1940 1950 1960 1970 1980 1990 2000
 GCTTTTACATCTTCATTAGGTAATATAGTAGGTGTTAGAAATTTTAGTGGGACTGCAGGAGTGATAATAGACAGATTTGA
 2010 2020 2030 2040
 ATTTATTCCAGTTACTGCAACACTCGAGTAGTAGGTGACAGCTT

FIG. 9B

V I Y K K Q A T Q G S L I A T R A Y A G S S N T S T G
 D G G L I E Q K K A L A I A I S G E N G H S Y N I K V N F T S L E
 D K A A F W A T A F A I A I S G E N G H S Y N I K V N F T S L E
 A Q A L E N M K K V A S E D A V G R R M F Y S E P P S S T T
 G I D V E N Y D E P T A Q V H T S N F H T P V L A G F F I T T A
 A S Y K T I E R E N T A F L I I G S A G R A R S S H S S F T T
 H D K T G Y Y I S T K V N F L I I G S A G R A R S S H S S F T T
 A V N L V E M V V G E I Y P I T Y D T L Y P S H R I S S A V
 S Y D G Q V A D T T L E A Q D K V F Y P L L F S S V G N A P
 P G T P E S D W K V N E A T H S P N I F T S S Q S N G E W S F
 P P S Y T M S S Q D N T D T F K G K S E T T S S Q S N G E W S F
 A K Y T L S S G L N S P K A N G H S N K S E T T S S Q S N G E W S F
 I G T F V P L S S G L N S P K A N G H S N K S E T T S S Q S N G E W S F
 G I G T F V P L S S G L N S P K A N G H S N K S E T T S S Q S N G E W S F
 L G H K V T E E K I N S L T H I G E V P V S E L S S R F F Y V F F
 L Y W V L F R S L M S L D A V S Q L C N L G P T G P P M L G N Y R
 L S S D G L S P T S L K E I G A L Y F K F T I S Y A N N R A N H F I
 A S S D G L S P T S L K E I G A L Y F K F T I S Y A N N R A N H F I
 I G F D A G L S L E S S K N P V D G E A P T P V I M G G V F N N I K I
 I N Y K L L N G S I E H Q A V R R I T G R H L V Q G T Q S A N V T S S G
 I L E N G K E V I N G S I E H Q A V R R I T G R H L V Q G T Q S A N V T S S G
 I M G S K V E S G P L V G I P Y N I T G R H L V Q G T Q S A N V T S S G
 S V Q L K R L R H Q A V A N S L I L S A Q L I S S Q S A N V T S S G
 A F T P I S E R E H Q A V A N S L I L S A Q L I S S Q S A N V T S S G
 F S G N T A V V K H W A G V V A G C V S I I V S D S I L V R S N
 L K S E E G A S R L F A V V T A R T R S H Q I L S L F S R R T A V
 K S K N A D L N S E A G I M Q N T A R T R S H Q I L S L F S R R T A V
 R S P D N A G A L N S E A G I M Q N T A R T R S H Q I L S L F S R R T A V
 S D K V D F K A G A L N S E A G I M Q N T A R T R S H Q I L S L F S R R T A V
 M V Q S V R A C K Y A N I S S N V P K N Q Y A I G M I G T V N

1 31 61 91 121 151 181 211 241 271 301 331 361 391 421 451 481 511 541 571 601 631 661 691 721 751 781 811 841 871
 5 10 15 20 25 30

FIG. 10

FIG. 11

1
31
61
91
121
151
181
211
241
271
301
331
361
391
421
451
481
511
541
571
601
631
661
691